



RME FIREFACE UFX

Regime change is back in style. RME may have the three-letter acronym, but just how good is its intelligence?

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▶ As mainstream computer manufacturers are increasingly inclined to serve a user-base that's focused on web browsing, media consumption and gaming, the more technical user is becoming somewhat marginalised. While people are storming the barricades throughout North Africa and the Middle East, the voice of protest from the computer music minority barely amounts to a peep. If you're working in a studio (or bedroom) where you rely far more on virtual studio equipment than real analogue gear then you're probably getting used to commercially enforced cycles of obsolescence by now. For my part it makes me mad as hell but, like everyone around me, I seem to keep taking it on the chin.

In the past 12 months AT has reviewed RME's several attempts to buffer itself (and end-users) from such fickle fluctuations. The Fireface UC (AT 72) introduced its programmable USB core; developed in direct response to increasing instability in Apple's Firewire hardware. The Babyface (AT 78) expanded on the theme with an increased commitment to hardware DSP routing and processing isolated from the driver. Now with the flagship Fireface UFX, RME has produced the most complete manifestation of its current ideology to date.

POWER SHARING AGREEMENT

Like its cousin, the UC, the UFX carries the torch of the enduring Fireface product line. While the UC was very much a Fireface 400 with a core transplant, the UFX is far more than a surgically enhanced Fireface 800. Much of the early discussion surrounding this device has focussed on the UFX acting as a dual USB/Firewire interface. Despite the continued success of the Fireface 800, RME has – somewhat bizarrely – elected to equip the newer UFX with a slower Firewire 400 connection. RME claims there would have been no benefit – in terms of either track count or latency reduction – in employing the higher speed 1394b interface. Despite this assurance, however, a section of the user manual details some limitations of the Firewire option and the driver helpfully provides a channel-limiting setting to free up bus

bandwidth and solidify performance. While this is intended to assist users when debugging less than perfect computer hardware it still suggests the UFX is pushing the Firewire 400 bus to its limit.

While the UFX is capable of stable performance when connected via Firewire, for some users its full resolution, track count and low-latency stability may only be truly realised on the USB side of the device. The UFX carries a USB 2.0 port and despite its programmable USB core it will remain as such. With the backwards compatibility of USB 3.0, however, there should be no problem locating a suitable port for some time to come. Unfortunately, as Martin Walker warned us last issue in his regular PC Audio column, this is by no means your only concern. To achieve advertised performance benchmarks you'll still need a computer that allocates adequate resources to its USB buses and avoids potential conflicts that will certainly see you raising buffer settings and associated latencies to disappointing levels. RME addresses this issue with additional instructions for debugging USB performance, particularly under Windows. An 'Errors' meter, for instance, has been included as part of the USB driver, and this should be used alongside third-party system latency tools, to identify issues and tune performance. With an appropriate system, audio latency of around 2ms (when working at 96kHz) is certainly possible.

My experience suggests that while an affordable PC laptop will fail abysmally to reach these standards, most (but not all!) high-performance desktop machines allow the UFX to live up to the hype. While error-free recording is generally my highest priority, I should note that I encountered some momentary audio stuttering during playback on all four Windows machines with which the interface was tested. These occurred when executing a range of simple actions – pause, stop record, bypass plug-in group, enable channel input monitor – inside a number of audio applications. These interruptions are disconcerting rather than destructive and one would hope they would be eradicated with future updates. Most notably, they do not occur when connected via

Firewire. Limited testing on a MacBook Pro demonstrated stable performance without these somewhat intrusive issues.

GENERAL ASSEMBLY

The *all-in-one solution* branding has been applied to any number of audio products over the years. With the increasing power and use of FPGA (and other DSP) chips, a compact and affordable internal solution is growing ever closer. The UFX's hybrid operation extends far beyond its two-faced bus connectivity. Its ability to operate free of any computer with the aid of (only) six user-configurable setups ensures this device covers a lot of ground in a single rack space: mic pre/DI, A/D & D/A converters, MIDI interface, patch bay, digital mixer... hard disk recorder? Just be sure to leave it some breathing space in the rack or you'll risk suffering overheating-related faults down the track.

To start, the UFX is a four-channel mic pre/DI utilising front-panel Neutrik combo connectors. All controls are accessible within the TotalMix FX software mixer and via a full colour two-inch screen at the front-right of the unit. Different 'Settings' screens can be easily navigated via two dual-function continuous rotary encoders that also act as momentary push buttons. 48V phantom power is switchable on a track-by-track basis. Gain is adjustable individually in 1dB increments from 10 to 65dB, even when pairs are grouped as a stereo channel. This quartet of inputs, assigned to Channels 9 through 12, can also serve as additional line-level inputs. Selecting 'Instrument' mode and setting the gain to 19dB comes pretty close to matching the rear panel inputs when using their '+4' level calibration.

As has come to be expected from RME, the performance of the preamps inside the UFX is more than serviceable, their 'sound' characterised by a musical midrange that's complemented by an extended bottom end. I wouldn't describe them as 'airy' so if you're chasing that clarity in the top end you may want to look elsewhere. Nevertheless the pres offer a balanced colour that I was happy to include in my palette. As instrument DIs they excel, outperforming many of the more expensive options. This performance is further enhanced by RME's use of 'parallel conversion' on these channels. Simplistically understood as a form of hardware oversampling, this feature has been included to take full advantage of the preamp chip's capabilities.

BORDER CROSSINGS

The rear panel of the UFX is crammed with connectivity for the remaining inputs and outputs. It's here that the unit's function as both A/D & D/A converter and digital format hub comes to the fore. Eight servo-balanced TRS connectors handle the inputs while a further six servo-balanced TRS outputs cover Channels 3 to 8. Outputs 1 & 2 are provided via balanced XLRs. Unlike all the TRS connectors these main outputs will not automatically adjust to the use of unbalanced cabling, so if the need arises you'll have to make the necessary modifications to XLR pin assignments and level calibrations yourself. All of these analogue, rear-panel connections feature three pre-defined level calibration options (-10, +4, Lo/Hi gain), while the XLR outputs deliver a fourth 'Reference' calibration (+24dBu = 0dBFS). Converter performance has again edged further forward. While the difference between converter generations seems to be narrowing, there was an audible difference in depth and clarity best described as an increase in the sense of reality versus representation.

Additional digital connectivity is supplied via two ADAT I/O channels and a pair of AES/EBU I/O via XLR. S/PDIF is available optically via ADAT 2 or through the use of an

AES/EBU converter cable. All of these connections operate to the full 192kHz audio resolution, although SMUX4 operation will reduce the ADAT channel count from 16 I/O at 48kHz to four I/O at 192kHz. It's worth noting that the UFX's internal converters have a very low latency of 12 samples. Other converters I connected via the digital inputs demonstrated varying performance with the greatest difference being 42 samples. If you're looking to maintain sample-accurate phase coherence between different inputs and outputs it may be necessary to either nudge the track position of certain recordings or employ a simple sample delay plug-in to realign files.

The cornucopia of connectivity is completed by wordclock I/O, two ports of MIDI I/O and a front panel USB 'Memory'



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connection. While this connector is yet to be made operational, a future firmware upgrade is currently in public beta testing that will deliver standalone multi-channel recording to, and playback from, an external storage device. That's right! RME has always provided a multi-channel recorder as a part of its Digicheck utility software. It seems this functionality will be incorporated into the TotalMix FX software within the interface itself – wow!

COUP DE MIX

But in some ways, most of this is just old hat. So what else would you expect from a new RME interface? Where things get really interesting is how all these and a few other elements are now linked. RME has provided some version of their DSP mixer for over a decade now. It has always allowed routing and submixing possibilities far beyond those available in most interfaces. Its current incarnation – TotalMix FX – hasn't exactly broken new ground but it's a significant advance in features and usability, made possible by increases in offline processing power.

The basic structure has not significantly varied from the previous Hammerfall DSP mixer but the user interface has been greatly updated and enhanced. Three rows of nameable fader channels represent the available (depending on sample rate) hardware inputs, software playback channels and hardware outputs. While TotalMix FX is not fully scalable and the size of channel strips cannot be changed, the width of the mixer window is variable and the fader rows can be arranged in the familiar three-row, or a new two-row, configuration. Unlike the previous version, horizontal scrolling is now possible within each I/O section, allowing access to all channels on even the smallest of monitors. The mixer is complemented by a 'Control Room' master section and an 'Options' pane on the right. I still can't help but wish



Each Hardware Output channel (bottom row) is like an analogue mixer's bus returns. Rather than cluttering the upper channels' rows with send controls, the parameters of the Hardware Inputs and Software Outputs can be tweaked, including the new EQ, Dynamics and Reverb/Echo settings. Monitor mixes can be auditioned via a pre-defined Master Control Room output using the Cue buttons.

NEED TO KNOW

Price
\$3299

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Pros

Programmable core provides some future-proofing and endless updates.
Flexible connectivity between analogue and digital.
Full-colour screen.
TotalMix FX offers unparalleled routing and submix solutions.

Cons

TotalMix FX needs further development.
Hardware layout biased towards desktop installation.
Performance machine dependent.
Some of its most exciting features still in the wings.

Summary

The Fireface UFX is the next step in a movement towards high performance via the most ubiquitous and generic of interface connections. It currently falls short of its aspirations as a legitimate alternative to the digital mixer but its reprogrammable core ensures these hopes are not lost. In the meantime it delivers an infinitely flexible solution to most users' audio interface requirements.

the sizing of all this was more configurable and a full-screen mode was possible. Many of the controls are half the size of what we've come to expect within DAWs and I'd seriously consider dedicating a monitor to TotalMix FX if the UI was developed further. There may be graphics processing limitations that enforce these shortcomings but these still need to be addressed to further the device's claims as a digital mixer.

While TotalMix has improved its looks, it's the feature set of new DSP processing options and channel controls that constitute the most significant development for users. Channel pairs can be grouped into single stereo faders and channel strips can now be minimised to an ultra-compact meter display. All hardware input and output channels now feature three-band parametric EQ, low-cut filter, compressor, expander and auto-level processor arranged within two EQ and Dynamics panes. Per-pane presets have been included. While I'm not sure I'd describe the effects as 'musical', they're certainly very helpful, particularly when constructing individual monitor mixes. I noted the omission of gain reduction metering in the dynamics section and would welcome its inclusion in a future update. For me, here again, size was an issue. I'd love to see a single full-sized global channel inspector with enlarged effects sections that could display the selected channel's settings in detail. Both EQ and dynamics processing can be globally added to the recorded audio input via a single toggle within the driver. Perhaps in the future an either/or selection could be included too.

All channels feature phase invert and the software output channels are equipped with both width control and MS processing. A dedicated 24-bit/192kHz Reverb/Echo section is also located on its own chip. Inputs and software outputs provide a send to this effects section, while each hardware output has its own return level control. A variety of reverb and echo types are modelled here, and again a full preset implementation is present. I personally favoured the 'Classic' reverb – for that Lexicon-styled lushness – and while the current delay options are reasonable, I'm not sure you'd be using them for live dub mixing. In fact, I found many of the mixer controls suffered from some zipper noise when adjusting settings during playback. This is certainly an issue that would need to be resolved before you'd try an 'in-the-

box' mix in a live setting.

But wait, there's more. TotalMix FX delivers a new Loopback system which simplifies the recording of material processed in the box. The combination of saveable workspaces, mixer snapshots, temporary and stored fader, solo and mute groups facilitates the flexible management of latency-free monitor mixes like never before. Each hardware output pair can receive its own dedicated mix, including the two front panel headphone outputs. Mono outputs have been implemented and will be made available via an update to TotalMix shortly.

Settings for talkback, listenback, a second alternate speaker output, dim, mono, and default level recall all mean there's now little reason to place any other device between the computer and your monitors. A master volume knob, located to the left of the colour screen, allows control of the assignable master output channel and the two headphone outputs, in increments of 0.5dB. Basic support of the Mackie Control MIDI protocol also means that, with the right control surface, you can even get hands-on. Further developments of the MIDI system which would allow full control of all mixer parameters have been discussed but are still yet to be announced with any certainty.

COUNTING THE COST

The Fireface UFX may not be quite ready to take control over of your entire studio but it's certainly nominating itself for the leadership. Its significant use of front-panel connections hints at its leaning toward prosumer rather than professional use and personally I would like to see the return of the rear panel analogue D-sub, featured on previous RME devices (such as the ADI 8-DS). This could possibly allow half of the front panel connections to relocate to the rear for permanent patchbay connection. While its USB implementation is capable of delivering low-latency performance it's susceptible to interference by less-than-perfect machines, and while not strictly necessary, I can't help but ponder whether the added bandwidth of USB 3.0 or Apple's new Thunderbolt interface will deliver some welcome operational 'headroom'. At this point in time, however, the UFX is an excellent option for a range of home recording, installation and live performance applications. Fingers crossed that the climate is right in your studio republic for the RME revolution. Viva El UFX! ■